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# THE RELATIONSHIP OF GROWTH MINDSET AND GOAL-SETTING IN A FIRST-YEAR COLLEGE COURSE

BY

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A thesis submitted in partial fulfillment of the requirements for the

Master of Education

Major in Counseling and Human Resource Development

Specialization in Student Affairs Administration

2016

THE RELATIONSHIP OF GROWTH MINDSET AND

GOAL-SETTING IN A FIRST-YEAR COLLEGE COURSE

This thesis is approved as a creditable and independent investigation by a candidate for the Master of Education in Counseling and Human Resource Development with a specialization in Student Affairs Administration degree and is acceptable for meeting the thesis requirements for this degree. Acceptance of this thesis does not imply that the conclusions reached by the candidate are necessarily the conclusions of the major department.

Ruth Harper, Ph.D.
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CONTENTS

# ABSTRACT

## THE RELATIONSHIP OF GROWTH MINDSET AND GOAL-SETTING IN A FIRST-YEAR COLLEGE COURSE

CHELSEA E. SORENSEN

2016

Previous research has found that mindset and goal orientation are intricately related in motivation and academic achievement, which holds significant implications for students in higher education (Dweck, 2009). While growth mindset-focused intervention has been studied, finding improvement in mastery goal-setting (Blackwell, Trzesniewski, and Dweck, 2007), goal-focused intervention accounting for student mindset has not. First-year college students' implicit theory of intelligence, or mindset, was measured before they were randomly assigned to set either a mastery- or performance-based goal in relation to their first exam in a difficult chemistry course. Upon receiving their first exam score, students were free to set whatever type of goal they wished in relation to the second exam. Results indicate that students who voluntarily set mastery-based goals earned significantly higher exam scores than those who set performance-based goals. Controlling for mindset, differences in perceived success and student satisfaction based on goal orientation need to be studied further. Limitations, suggestions for future research, and implications for student affairs professionals are discussed.


*Keywords:* growth mindset, mastery goals, motivation, college students, achievement

# Chapter 1: Introduction

## 1.1 Review of the Literature

Fixed and growth mindsets

Implicit theories are the term psychologists have given to the set of beliefs that individuals hold to make sense of the world around them. In her body of work, Carol Dweck has explored the concept of implicit theories of intelligence, or the beliefs individuals hold about intelligence that are shaped by their own experiences. This concept has developed into what is more commonly referred to today as "mindset." Although these beliefs are not always consciously known, hence why they are "implicit," theories of intelligence have widespread implications for human motivation, achievement, and mental health.

Implicit theories of intelligence may be categorized as either fixed or growth mindsets. An entity theory of intelligence, also known as a fixed mindset, is the belief that one's intelligence is a set, static trait, that there is a finite amount that dwells in one's mind, and it cannot be changed (Dweck, 2000). In contrast, an incremental theory of intelligence, or growth mindset, is the belief that intelligence is not a fixed trait, but can be increased and improved through learning and effort. Each of these implicit theories greatly impacts the way people encounter the world, and the repercussions of these beliefs have been studied extensively.

Stipek and Gralinski (1996) sought to explore associations among intelligence, effort, and performance in children in grades three to six. Two scales were created for factor analysis of the questionnaires the participants completed: The Ability-Performance Beliefs scale and the Effort-Related Beliefs scale. The first scale measured

beliefs similar to Dweck's entity theory of intelligence and the second measured beliefs similar to her incremental theory of intelligence. Results of the study showed that older students, particularly, who believed that performance and ability are fairly stable and affected by intelligence, characteristics of entity theory, were more concerned about performance. They also claimed to use more superficial learning strategies than those students who held incremental theories of intelligence. In contrast, students who believed ability and performance are able to change with effort were less concerned about task performance and held beliefs most similar to Dweck's incremental theory of intelligence.

Ying-Yi, Chi-yue, Dweck, Lin, and Wan (1999) looked to determine the relationship among theories of intelligence and effort versus ability attributions to failure or success. First, participants completed a questionnaire to assess their implicit theory of intelligence as entity- or incremental-based. Next, participants were given negative feedback on a task supposedly related to their level of intelligence. Then, they were asked to explain their poor performance. Those with incremental views of intelligence were more likely to attribute outcomes to effort, while those with entity views attributed their poor performance to their ability. In the second phase of this study, university students who were classified as previously low-performing were asked how likely they would be to take a remedial course that had been proven effective. The results suggested that those with incremental views of intelligence may be more likely to cope with failure by taking remedial action, such as spending more time learning material for a class, or taking an additional course, rather than demonstrating helpless behavior in the face of setbacks.

Goal setting; learning goals and performance goals

In addition to implicit theories of intelligence, a closely related concept, goal orientation, has been extensively studied as a predictor of achievement. In general, two frameworks have been used to discuss goal orientation and motivation in academia. The first, called performance-based, is characterized by the construction of goals that rely heavily on a demonstration of ability, such as skill or intelligence, to be satisfactorily achieved (Dweck, 2000). The other, called learning-based or mastery-based, is characterized by the improvement of skill and/or overcoming a challenge. In this orientation, the process of trying hard and putting in great effort is often seen as achieving the goal in itself.

In a study by Ames and Archer (1988), motivational patterns and goal orientation were studied in a high school classroom setting, with academically advanced students as participants. Students were randomly selected to answer a questionnaire on their use of effective learning strategies, task choices, attitudes, and causal attributions. The results showed that whether students held a mastery- or performance-goal orientation affected their task choice, attitudes, and beliefs about success and failure based on their perception of experiences in the classroom and particular learning strategies. Students with mastery goal orientations were more likely to seek challenging tasks, liked their class more, and viewed success and effort as dependent on each other. This supports my own research hypothesis that students who are motivated by mastery and learning goals, rather than performance or ability goals, are more adaptive in educational environments and more academically successful.

Jagacinski and Duda (2001) based their study on research that suggests that learning goals predict mastery and more-challenging task selection while performance

goals predict selection of a task that will protect one's ego by not threatening one's display of superior competence and ability, and avoiding the fear of failure. In other words, performance goals are predictive of the selection of a task that is simple and able to be performed without difficulty. The researchers sought to find the best measure of individual differences that led to this variation in goal orientation by assessing various scales of intelligence, task, and ego. Results suggested that the Ability and Task Orientation scales from the Patterns of Adaptive Learning Survey were the best measures based on construct validity, factorial validity, and distributional characteristics. This may be a valuable tool to utilize in future research through these measures' ability to assess implicit intelligence beliefs and their relation to effort and learning.

Elliot, McGregor, and Gable's (1999) study examined the specific relationship between achievement goals and college exam performance. Two weeks before a midterm exam, 164 undergraduate students completed an exam-specific achievement goals questionnaire. A week later, the participants were given a questionnaire regarding their preparation for the exam. Although the researchers found that performance-approach goals were positively predictive of exam effort, persistence, and exam performance, they also were predictive of merely surface processing, or memorization and rehearsal, as opposed to deep processing or critical thinking. Mastery goals predicted greater effort, persistence, as well as deep processing. This may suggest that while some performance goals are correlated with high scores on an exam in the immediate future, they are not indicative of the deep processing associated with mastery learning or lasting competence.

Relationship between the two, specifically in academic settings

Previous research has found that mindset and goal orientation are intricately related in academic achievement, with significant implications for students. Dupeyrat and Marine (2005) applied Dweck's (1986) theory of motivation, which stated that achievement behavior is a function of learners' implicit views of intelligence and goal orientation. The participants chosen for this study were adults who selected the challenging task of going back to school. The researchers administered a questionnaire assessing motivation and academic engagement, and collected homework exercises completed by the adult students from participating teachers to determine how much effort students put into their work. Dweck's model was supported by the results, which showed a relationship among implicit theories of intelligence, goal orientation, and cognitive engagement in learning. In congruence with other research, this study found that mastery goals positively impacted learning activities and outcomes, while performance goals negatively impacted achievement and learning.

In Blackwell, Trzesniewski, and Dweck's (2007) study, the researchers looked to determine the relationship between students' entity versus incremental views of intelligence and academic outcomes. Intelligence- and achievement-beliefs of students in junior high school were assessed using a motivation-based questionnaire that addressed theory of intelligence, goals, students' beliefs relating to effort, and coping responses to failure. Then, students' academic achievement was measured over the course of two years. The results showed that participants with incremental views of intelligence had better educational trajectory than those with entity views, were more likely to believe that effort leads to positive outcomes, and were also more likely to use effort-based learning goals and strategies to cope with failure. An incremental theory intervention also created

a positive academic trajectory for students who started with fixed views of intelligence. This suggests that students' views of intelligence can be changed via intervention, leading to positive academic repercussions.

Finally, in Grant and Dweck's (2003) study, college students in a challenging premed course completed a learning and performance orientation scale that measured the types of goals the students set. Then, the participants completed indices of intrinsic motivation, mastery-oriented coping, and performance, based on a hypothetical setback or failure. Results found positive effects of learning goals on students' intrinsic motivation and performance in the difficult class. Learning goals were also predictive of mastery-oriented coping, better processing, and better grades. This study directly shows that learning goals may be a pivotal component of students' educational success in college.

Although the results of these studies demonstrate a convincing connection between incremental theories of intelligence and learning-based goals with academic success, most studies found this correlation via survey, without manipulation. The intervention studies that have been done have focused on manipulating participants' implicit theories of intelligence, not the types of goals they set (Blackwell, Trzesniewski, & Dweck, 2007). Elliot, McGregor, and Gable's (1999) findings of high exam scores but poor processing by those who set performance goals identify a common flaw in educational assessment, particularly at the college level. Dweck (2000) points out that her research has found that success in school does *not* foster mastery-oriented qualities; rather, students with high ability are often the most worried about failure, most likely to question their ability, and fail to persevere in the face of obstacles.

So where does that leave first-year college students, particularly in advanced courses and/or honors programs? Did they get there because of their desire for a learning experience and their belief in growth, or have they sheltered their high-performing ability by engaging in a series of low-effort successes? What happens when students are challenged by their first difficult college course? And ultimately, how is their transition to college influenced by their existing mindset and its far-reaching outcomes (see Figure 1)?

### 1.2 Purpose:

The purpose of this study is to further explore the relationship between implicit theories of intelligence and motivational behavior. By first manipulating first-year college students' goal orientation through random assignment, and then removing manipulation and assigned conditions, this study aims to identify the differing effects of mastery- and performance-based motivational strategies that students with existing differences in mindset use to pursue academic success.

## Chapter 2: Background of the Study

### 2.1 Theoretical Framework

The theoretical framework that is laid out by Dweck's lifetime of extensive research directly lends itself to this study. Her theory of motivation, which stated that achievement behavior is a function of learners' implicit views of intelligence and goal orientation, paved the way for decades of research on motivation, intelligence, and success (Dweck, 1986, Ying-Yi et al., 1999, Blackwell et al., 2007). Dweck's concept of implicit theories of intelligence, growth and fixed, evolved into what is called "mindset" today. As described, growth mindset has been proven to be associated with the selection

of challenging tasks that hold learning potential, mastery goal-setting, effort-based coping strategies in the face of failure, and longitudinal success. Although these concepts easily apply beyond the scope of classrooms and academic achievement, Dweck's theory of motivation has proven perhaps most directly influential in education, from which a wide range of ages is able to benefit (Dweck, 2000).

Perhaps surprisingly, Dweck's theory of motivation does not rely on a strict measurement of learners' intelligence, but rather their mindset, to predict achievement. This suggests that students for whom school comes easily, while very bright, may be relying on the performance aspect of education that is constantly reinforced by a system focused on testing. When measured in terms of cognitive engagement or deep processing, these students may not fare as well (Dupeyrat & Marine, 2005). In this way, these bright students may be indirectly taught to select easy tasks that do not threaten their view of their own intelligence, and may subsequently miss out on valuable learning experiences. Additionally, when these students encounter failure for the first time, they are more likely to demonstrate helpless behavior, rather than believe that they may be more successful in the future by taking remedial action or putting in greater effort next time (Grant & Dweck, 2003).

**2.2 Methodological Approach**

This study was quantitatively designed, with the goal of future replication with a larger sample population in mind. Although the small sample size could make statistically significant results weaker, by treating this as a pilot study, we hoped to identify limitations that may be avoided in the future, with a larger group of interest. The approach of this study used initial random assignment to conditions in order to maintain

the integrity of the experimental approach, and then transitioned to recording the free will actions of participants to try to capture their decisions made about goals and motivation based on the feedback from their first exam.

**2.3 Study Design and Procedure**

On the first day the group of participants met as a class, a stack of worksheet packets was passed around the room. The first three pages of the packets were identical, but the final page differed between the two conditions, learning goal and performance goal. The stack was arranged ahead of time so that the packets alternated between the two conditions. Participants passed the stack of packets around the room, so there was no predetermined path, and they took packets both off the top and bottom of the stack. All participants completed a demographic information form, followed by a theory of intelligence scale and goal choice questionnaire, taken from Dweck (2000) (see Appendix A). These two measures gave a baseline reading of participants' implicit theories of intelligence, and provided some insight regarding whether the mindset of each of the students was more "growth" or "fixed" in nature.

As mentioned, the final page of the packet differed between conditions. Those who received the learning goal packet read a description of the criteria necessary to create a learning goal, as well as examples of learning goals. Then, the instructions asked students to write down their own learning goal in relation to the first exam in the course. The performance goal version was arranged in the same manner, with descriptions of performance goals, followed by examples, and then an invitation to write down a performance goal in relation to the first exam in the course (see Appendix B).

Then, five days before the first exam in the course, participants were emailed individually with a reminder to keep their goal in mind as they prepared for the upcoming exam, and given a transcription of the goal they wrote in their packet.

On the final page of the exam, participants were asked how many hours they spent preparing and studying for the exam, as well as what actions they took toward achieving their goal. This question was asked with the intention of determining whether the participants remained cognizant of their goal after they made it and used it as a motivation tool, or forgot about it, failing to utilize their goal.

After the participants received their grade back from their first exam, they were asked to complete a reflection form. This form asked about participants' satisfaction with the outcome of their exam, whether their goal was achieved, and how much they believed their goal influenced their performance. It also asked participants if they planned to change their goal, giving them the option to write a new goal uninhibited by the constraints provided in their randomly assigned goal condition. This was done with the intent of monitoring which participants changed their goal, and specifically their *type* of goal, based on their existing mindset.

Again, five days before the second exam, participants were emailed individually with a reminder to keep their goal in mind as they prepared for the upcoming exam, as well as a transcription of the goal they wrote in either their initial packet or post-test form, depending on their decision to change it or not.

The same questions were asked of participants on the final page of the second exam as the first. Then, after participants received feedback on their second exam, they were asked to complete the same reflection form, allowing for the comparison of

students' satisfaction in their exam performance when assigned to a goal condition or given freedom to make their own type of goal.

**2.4 Participants**

The participants in this study were 35 students enrolled in Chemistry 115, Atom and Molecular Structure – Honors, at South Dakota State University. The professor for this course agreed to collaborate with the primary researcher by allowing his students to participate and incorporating their data collection into his class.

Human Participants and Ethics

Prior to collecting data, IRB approval was obtained for the study. Because no known risk to participants was identified, students were not required to complete a consent form, but were given an information sheet and instructions for how to contact the researcher with any questions about the study. Students who agreed to participate were entered into a drawing for a gift card to a coffee shop on campus. Although the participants randomly assigned to the performance goal condition were predicted to not do as well on their first exam as those in the learning goal condition, setting a performance goal was not expected to hinder any student's ability to prepare for the exam. Ultimately, setting any goal in an academic realm may prove more beneficial to students than setting no goal at all. Additionally, throughout the study, the professor reserved the right to compare students' progress in the course and their outcome on the exam, and retroactively adjust scores if they were not reflective of the students' ability and effort. Therefore, final grades in the class could not be harmed by the chance assignment to the performance goal condition.

## Chapter 3: Data Analysis

### 3.1 Analysis Methods

To determine whether goal condition affected student satisfaction with exam performance, Wilcoxon non-parametric tests were completed for two samples. The first test regarded the first exam in which conditions were randomly assigned, and the second test regarded the second exam in which goal conditions were chosen, due to students freely creating their own goal. Both tests considered participants' response to the satisfaction measure on the last page of their respective exams. The analysis found the exact test, two-sided p-value of $p = 0.2224$, $p > 0.05$ significance for the first exam. The same analysis of satisfaction and goal condition regarding the second exam found $p = 0.5789$, $p > 0.05$.

The analysis of students' perceived goal achievement on each exam, which used the binary yes or no response and the randomly assigned goal condition of the first exam and then the chosen goal condition of the second exam, used a test of independence for a two-by-two table. Because of the small sample, Fischer's exact test was chosen over a chi-square test, resulting in two-sided $p = 0.7015$, $p > 0.05$ significance for exam one and $p = 0.0687$, $p > 0.05$ for exam two.

To measure the effect of assigned condition on exam one scores and chosen condition on exam two scores, the Wilcoxon non-parametric test for comparing two samples was performed. The two-sided exact test found $p = 0.4928$, $p > 0.05$ significance for the first exam, and $p = 0.0087$ for the second exam, proving statistical significance with $p < 0.05$.

To determine whether students who reported holding a growth mindset performed better when assigned to the learning goal condition rather than the performance goal condition, an ANCOVA (analysis of covariance) was performed, using exam one scores as a dependent variable and assigned goal condition and theory of intelligence (mindset) score as independent variables. The results of the analysis showed that the p-value was not significant, with $p > 0.7162$.

Differences in reported theory of intelligence, or mindset, in honors students versus non-honors students were analyzed by performing the Wilcoxon non-parametric test for comparing two samples. The two-sided t approximation found a p-value of $p > 0.4147$, not statistically significant with $p > 0.05$.

Logistic regression analysis was performed to determine whether students who scored higher on the measure of growth mindset were more likely to voluntarily set learning goals for the second exam. Chosen goal condition was treated as the binary dependent variable and theory of intelligence score was treated as the independent variable. One missing observation was removed before analysis. Although this analysis was not significant, with $p = 0.7143$, the odds ratio estimates of the logistic regression fit show a point estimate of 1.286. This suggests that for every one unit of increase in theory of intelligence score (growth mindset measure), the odds of the participant voluntarily creating a learning goal increased by 28.6%. While not statistically significant in this study, this is an interesting and noteworthy finding.

## Chapter 4: Findings and Interpretations

### 4.1 Results

Perhaps the most noteworthy result from this study is the statistically significant finding that participants who chose to set learning goals in relation to the second exam scored significantly higher than those who chose to set performance goals. Although more students chose to set performance goals when uninhibited by the constraints of their assigned condition, those who voluntarily set learning or mastery goals scored an average of eight points higher than their counterparts. This speaks to the power of this particular type of goal setting and academic achievement.

Taken into consideration with the odds ratio estimate that for every one unit increase in reported growth mindset, students were 28.6% more likely to set learning goals, the importance of teaching students about mindset and learning as subjects that deserve their effort and attention is underscored. Growth mindset and incremental theories of intelligence lead to the tendency to set learning goals, which results in significantly higher test scores and better academic performance, as evidenced in this study.

Despite generally statistically insignificant p-values in the other data analyses, this study identified other notable differences in results between conditions. For example, students assigned to the learning goal condition in relation to the first exam did score higher than those who were assigned to set performance goals. However, given the very small sample, the difference in mean scores was not enough to be proven statistically significant. Another explanation for this could be that assigning students to set a specific type of goal may not be realistic; students will ultimately do what they want, even if their actions do not follow the instructions given to them. Allowing

students to set unrestricted goals likely resulted in greater follow-through from students taking action toward achieving their goal.

Similarly, participants assigned to the learning goal condition in relation to the first exam self-reported being, on average, more satisfied with their exam performance than those assigned to the performance goal condition. However, this difference was not enough to result in a statistically significant p-value.

The hypothesis that honors students would report greater growth mindset views, although not statistically significant, was also supported by the average theory of intelligence scores (i.e. fixed vs. growth) reported by honors and non-honors students. This hypothesis was made under the belief that, by enrolling in the honors college at the university, these students selected a more challenging task at the start of their college career. As described by previous research, this is characteristic of individuals who hold growth mindsets (Jagacinski & Duda, 2001). However, other research has found that students who are labeled as gifted or honors students may be more likely to believe that their intelligence is a fixed trait, something constant that defines their personality, which makes them vulnerable to holding a fixed mindset and preferring simple, performance-based tasks (Dweck, 2000). Future studies with larger samples may take this into consideration and study these populations of students further.

**4.2 Discussion and Implications**

Despite this study's small sample size, the results obtained from the analyses provide convincing evidence to support future replication with a larger population. As a pilot study, this research project shed light on first-year students' mindsets at the start of their transition to college. First and foremost, most students do not prefer to set learning

goals when given the option. They are more comfortable with performance goals, even though previous research has proven them to yield less successful results. This may be evidence of the reinforcement students are given in their earlier school years supporting performance-based education, goal setting, and subsequently, fixed mindset.

As alluded to, more study of honors students and high-achieving students is needed. There seems to be contradictory evidence as to this population's tendencies in regard to task selection and mindset. Intuitively, these students' previous achievements seem to indicate that they hold the more successful growth mindset. Based on the results of this study, honors students' slightly greater average growth mindset scores seemed to support that line of thought. However, lacking statistical significance, a strong conclusion cannot be drawn.

Another possible explanation for the academic success of some honors students could be their adaptation to performance-based systems earlier in their education. By being labeled as high achieving, students may have internalized their view of their own intelligence as a key character trait and selected tasks simple enough for them to continue to perform very well. It is also possible that some of these students were not challenged in high school, despite selecting the most challenging academic courses available. In that case, experiencing academic challenge for the first time would prove more difficult for high-achieving students who may not have developed the resiliency of their peers. If this is the case, some honors students might well lack the effort-based coping mechanisms characteristic of those who hold growth mindset.

Although many of the results of this study were not statistically significant, overall, it may be argued that generally, the results do support the existing data regarding

growth mindset and learning goals. The finding that students who voluntarily set learning goals score significantly higher on exams than those who do not coincides directly with Dweck's theory of the relationship between achievement behavior, goal orientation, and implicit theory of intelligence. Together with the finding that for every one unit of increase in the measure of growth mindset, the probability of a student choosing to set a learning goal increased 28.6%, the intricate relationship between motivation and mindset is made evident. Given the other results described, future studies with larger samples hold great potential for supporting the existing data and yielding significant results.

Implications for Higher Education and Student Affairs Professionals

Mindset and goal-setting interventions have direct implications for students in higher education and student affairs professionals concerned with student success. Specifically, professional academic advisors may find growth mindset an effective framework from which to work with students, ranging from high-achieving honors students to students who may be struggling academically. Students who experience difficulty in their transition from high school to college may benefit from a growth mindset intervention, with particular attention to mastery goal setting, attribution of failure, and effort-based coping.

Professional advisors may be familiar with the "academic coaching" terminology at some institutions; interestingly enough, growth mindset is also very popular among athletic coaches (Dweck, 2009). The parallels between advising and coaching are the same reasons growth mindset is so applicable in these groups. It acknowledges the natural ability of students, but emphasizes the cultivation of hard work and effort through

setting short- and long-term goals. By encouraging students to think about intelligence as a muscle that must be strengthened and improved through a course of difficult tasks, growth mindset is inherently instilled. When students experience a setback or failure, they should not attribute the cause to their lack of innate ability, but rather their inadequate or ineffective effort leading up to that point. The "muscle" exists; it just may need more time and training before it is strong enough to master a particular task. This frame of reference will make students more likely to persist in the face of failure and is ultimately psychologically healthier for students who may not be used to being challenged. Students who rely on high performance as a key part of their identity, holding a fixed mindset, may feel threatened and even frightened if they struggle during the transition to college. This could result in capable students questioning whether they belong at college at all, and may impact the retention and transfer of those students.

Engaging college students in conversation about mindset and learning can be very empowering for the students. Many may be unfamiliar with the concept of implicit theories of intelligence and metacognition. By challenging students to move beyond the performance aspect of education and fixed mindset, student affairs professionals can encourage and support successful student development in college.

### 4.3 Limitations, Recommendations, and Conclusion

Limitations of the Research

Arguably, the most influential limitation of this study involved the sample size. Because this was a quantitative study, the small number of participants nearly guaranteed results that were not statistically significant. Given uncontrollable variables of class attendance, illness, etc., each incomplete data observation that could not be used in

analysis had a detrimental effect on the strength of the results. Were this study to be replicated, a much larger class or several sections of the same course would be a better sample population and more likely to achieve statistically significant results.

Additionally, a major limitation of this study was reliance on self-report data. Many of the questions asked of participants related to their own theory of intelligence, goal choice, and goal achievement, which require honest introspection. Naturally, participants may have suffered from social desirability bias, which is the tendency for respondents to answer in a way that makes them look good. Although the participants were told that their professor would not see their answers and their responses would not affect their grades, asking students to put their name on their survey could have substantial implications for this bias.

Other limitations of this study involved participants failing to follow instructions given to them on the packets they received on the first day of class. For example, some participants did not put their name on the packets, making it impossible to connect future data collection to the individual. Others did not follow the guidelines of each goal condition packet, meaning that although their packet instructed them to write a learning goal, they set a performance goal, or vice versa. Still others wrote "compound goals," meaning their goals were two-part and often contained elements of both learning and performance goals. Each of these limitations made for an even smaller sample of complete data sets.

Recommendations for Future Research

As mentioned, in future research and replications of this study, a larger sample size is of utmost importance. Because this study was approached as a pilot study, a larger

sample was not used, but would have been better for obtaining more statistically significant results. Researchers collecting data from students would also benefit from giving a more in-depth description of learning goals and performance goals at the initial contact. Given the difficulties following written instructions, participants may need explicit oral instructions that also teach them about the two types of goals and how to set a single type of goal. This would likely improve the response rate of usable, complete data sets. Although self-report data was a limitation to this study, it may still be the best option in the future, due to the nature of these topics. To minimize social desirability bias, future researchers may consider using a participation number as an identifier, rather than asking students to put their name on their responses. With these recommendations in place, future researchers may be able to improve and expand on studies of goal setting and growth mindset in higher education.

## Conclusion

The range of implications of growth mindset in education is critical for student success. Student affairs professionals are often responsible for helping new college students maneuver through the transition from high school to college through orientation programs, first-year seminars, and various advising roles, all with the ultimate goal of facilitating student development and student success. Given the abundance of research supporting growth mindset/incremental theory of intelligence and its relationship to motivation, task selection, resiliency, and effort-based mastery, it seems a natural topic for universities, if not K-12 schools, as well, to address with students.

As demonstrated by the results of this study, specifically the finding that participants who voluntarily set learning-based goals earn higher scores on their exams

than those who set performance-based goals, the way students frame academic goals can greatly impact their success in a challenging college course. With this result in mind, the other noteworthy finding that for every increase on the measure of growth mindset, students' likelihood of setting a learning-based goal increased 28.6%, demonstrates the importance of talking with students about the way they think about intelligence and encouraging growth mindset. In straightforward, albeit generalized, terms, higher exam scores are the result of learning goals, which are the result of growth mindset.

Higher education provides students with tremendous potential for personal development with lasting effects for the rest of their lives. The primary concern of many student affairs professionals is helping students achieve that potential by facilitating student development and student success through a variety of means. The potential application of growth mindset and learning/mastery goals in student affairs professionals' practice, whether specializing in academic affairs, career counseling, co-curricular advising, or residence life, holds great promise for the long-term success of students, long after graduation. Anytime students experience challenge while developing a skill or ability, they hold the opportunity to implement a growth mindset approach.

Unfortunately, many students arrive at college conditioned to have an existing fixed mindset. The majority of the participants in this study reported that, if they had to choose, they would rather get a good grade in a course than be challenged. Because so much emphasis is seemingly placed on the performance aspect of education at every level, it is not surprising that most first-year college students voluntarily set performance-based goals and hold fixed mindset. However, due to the effect of fixed mindset on task selection, these students may be reluctant to select courses and activities in college that

appropriately challenge them, causing them to miss out on valuable learning opportunities and diminishing the potential of their personal development in college.

To combat the fixed mindset tendency of first-year college students, student affairs professionals must bring the topic of implicit theories of intelligence to the forefront in their work with students. Growth mindset and mastery goals directly coincide with the mission of student development. By empowering students to think about their own concepts of learning and intelligence, and challenging them to embrace growth mindset, students will be more likely to set mastery goals associated with better academic performance, more willing to take healthy risks that result in learning, more resilient, and longitudinally successful. With this supportive framework, student affairs professionals may better facilitate student success and, through their higher education experience, help students achieve the great potential they hold.

# REFERENCES

Ames, C. & Archer, J. (1988). Achievement goals in the classroom: Students' learning strategies and motivation processes. *Journal of Educational Psychology, 80*. 260-267.

Blackwell, L.S., Trzesniewski, K.H. & Dweck, C.S. (2007). Implicit theories of intelligence predict achievement across an adolescent transition: A longitudinal study and an intervention. *Child Development, 78*, 246-263.

Dupeyrat, C. & Marine, C. (2005). Implicit theories of intelligence, goal orientation, cognitive engagement, and achievement: A test of Dweck's model with returning to school adults. *Contemporary Educational Psychology, 30*. 43-59.

Dweck, C.S. (1986). Motivational processes affecting learning. *American Psychologist, 41*, 1040-1048.

Dweck, C.S. (2000). *Self-theories: Their role in motivation, personality, and development*. New York, NY: Psychology Press.

Dweck, C.S. (2009). Mindsets: Developing talent through a growth mindset. *Olympic Coach, 21*(1), 4-7.

Elliot, A. J., McGregor, H. A., & Gable, S. (1999). Achievement goals, study strategies, and exam performance: A mediational analysis. *Journal of Educational Psychology*, *91*(3), 549.

Grant, H., & Dweck, C. S. (2003). Clarifying achievement goals and their impact. *Journal of Personality and Social Psychology, 85*, 541-553.

Jagacinski, C.M., & Duda, J.L. (2001). A comparative analysis of contemporary achievement goal orientation measures. *Educational and Psychological Measurement, 61*, 1013-1039.

Stipek, D., & Gralinski, H.J. (1996). Children's beliefs about intelligence and school performance. *Journal of Educational Psychology, 88*. 397-407.

Ying-Yi, H., Chi-yue, C., Dweck, C.S., Lin, D. M., & Wan, W. (1999). Implicit theories, attributions, and coping: A meaning system approach. *Journal of Personality and Social Psychology, 77*, 588-599.

TABLES AND FIGURES

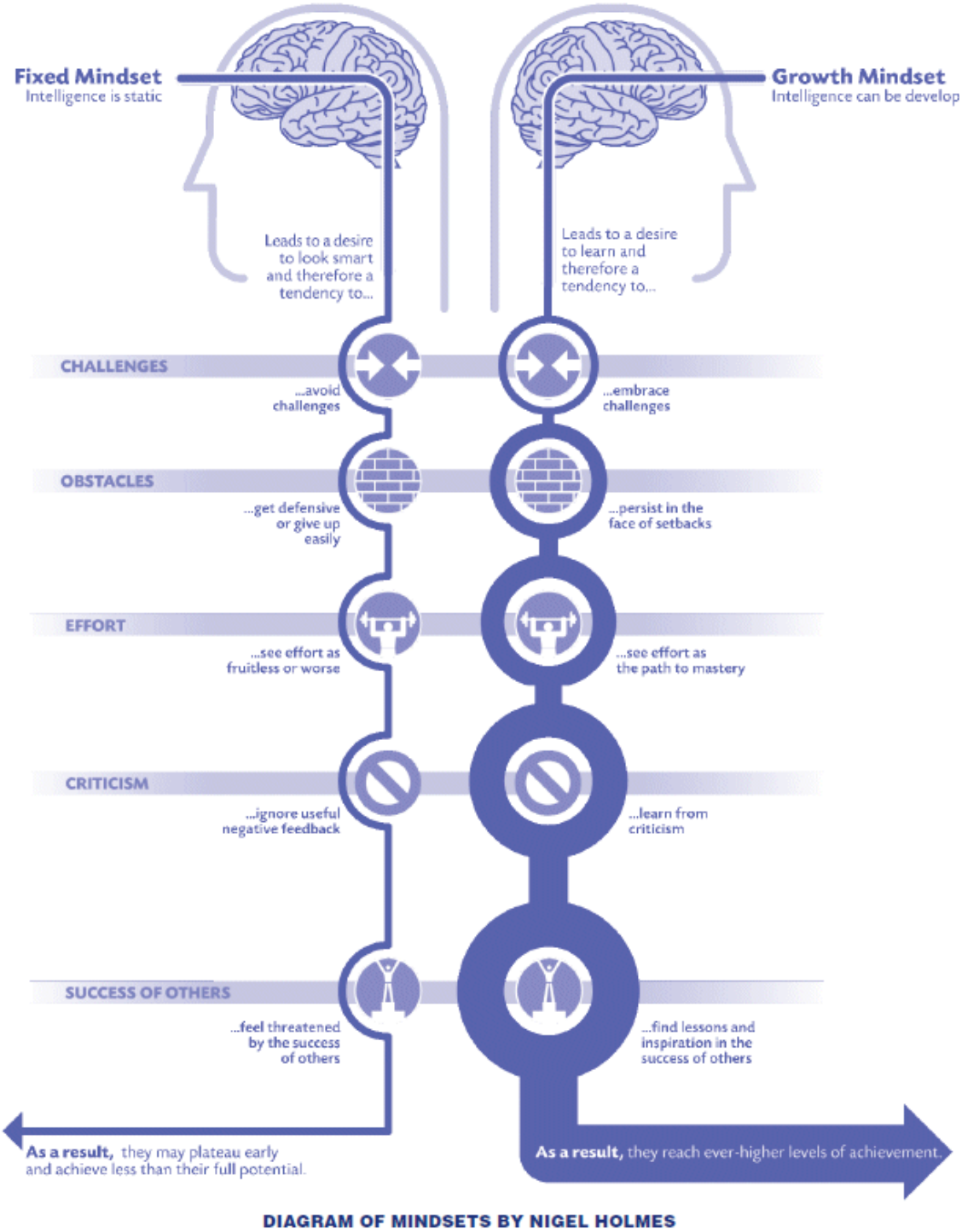


*Figure 1.* Diagram of mindsets by Nigel Holmes, taken from Dweck (2009). This figure compares associated results of fixed and growth mindsets.

# APPENDIX A

## Theories of Intelligence Scale

This questionnaire has been designed to investigate ideas about intelligence. There are no right or wrong answers. We are interested in your ideas.
Using the scale below, please indicate the extent to which you agree or disagree with each of the following statements by writing the number that corresponds to your opinion in the space next to each statement.

| 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|
| Strongly Agree | Agree | Mostly Agree | Mostly Disagree | Disagree | Strongly Disagree |

____ 1. You have a certain amount of intelligence, and you can't really do much to change it.

____ 2. Your intelligence is something about you that you can't change very much.

____ 3. No matter who you are, you can significantly change your intelligence level.

____ 4. To be honest, you can't really change how intelligent you are.

____ 5. You can always substantially change how intelligent you are.

____ 6. You can learn new things, but you can't really change your basic intelligence.

____ 7. No matter how much intelligence you have, you can always change it quite a bit.

____ 8. You can change even your basic intelligence level considerably.

Goal Choice Questionnaire

1. If I knew I wasn't going to do well at a task, I probably wouldn't do it even if I might learn a lot from it.

| 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|
| Strongly Agree | Agree | Mostly Agree | Mostly Disagree | Disagree | Strongly Disagree |

2. Although I hate to admit it, I sometimes would rather do well in a class than learn a lot.

| 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|
| Strongly Agree | Agree | Mostly Agree | Mostly Disagree | Disagree | Strongly Disagree |

3. It's much more important for me to learn things in my classes than it is to get the best grades.

| 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|
| Strongly Agree | Agree | Mostly Agree | Mostly Disagree | Disagree | Strongly Disagree |

4. If I *had* to choose between getting a good grade and being challenged in class, I would choose…(Circle one)

"good grade" "being challenged"

# APPENDIX B

## Learning Goals

What are they?

- Learning-based goals involve the mastery of a particular task or subject.
- Learning is seen as the inherent goal in itself.
- Enjoyment is gained from mastering difficult tasks.
- Effort-based pursuit of mastery is emphasized, as well as intrinsic motivation.
- A demonstration of skill or ability is *not* needed to show achievement.
- Concrete understanding and appreciation of potential learning experiences are key components of learning goals.

Examples:

- To be able to draw connections between each of the major concepts in this class.
- To be able to fully meet the objectives of the course as outlined in the syllabus.
- To comprehensively understand each of the themes presented in class and in the course material.

Write your own learning goal in relation to the first exam in this course:

_____

_____

_____

_____

# Performance Goals

What are they?

- Performance-based goals require a demonstration of skill or ability to show achievement.
- They are often characterized by avoiding mistakes and errors.
- Enjoyment is gained from performing a task well, particularly compared to others.
- Performance goals do *not* rely on effort, but rather the skills that are required to complete the task.

Examples:

- To make fewer than four errors on each class assignment.
- To get an A on the next exam.
- To have the best grade in my lab group.

Write your own performance goal in relation to the first exam in this course:

_____

_____

_____

_____

_____